

IN THE CLAIMS:

Please cancel Claims 67 to 71, 75 and 76 without prejudice or disclaimer of the subject matter, and amend Claims 59 and 77 as shown below. The claims, as pending in the subject application, read as follows:

1. (Previously Presented) A process for producing an electrode material for a rechargeable lithium battery in which an oxidation-reduction reaction is used, said process comprising the steps of:

(1) mixing at least one kind of a metal compound (a) selected from the group consisting of metal salts and metal complexes of a metal (a') capable of being electrochemically alloyed with lithium, at least one kind of a transition metal compound (b) selected from the group consisting of transition metal salts and transition metal complexes of a transition metal (b'), and a complexing agent (c) with a solvent (d) to obtain a mixed solution,

(2) mixing a reducing agent (e) with said mixed solution to obtain a mixture with a pH of less than 2, and

(3) oxidizing said reducing agent contained in said mixture obtained in said step (2) to reduce an ion of said metal (a') and an ion of said transition metal (b') contained in said mixture by adding an alkali to said mixture obtained in said step (2) so that the pH value of said mixture is changed from less than 2 to a value in a range of from 3 to 12, thereby to obtain an amorphous alloy material capable of being electrochemically alloyed with lithium as said electrode material.

2. (Original) The process according to Claim 1, wherein said amorphous alloy material is a powdery amorphous alloy material containing an amorphous metallic material.

3. (Original) The process according to Claim 2, wherein said powdery amorphous alloy material has a main peak having a half width of more than 0.2° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source.

4. (Original) The process according to claim 2, wherein said powdery amorphous alloy material has a main peak having a half width of more than 0.5° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source.

5. (Previously Presented) The process according to claim 2, wherein said powdery amorphous alloy material has a peak appeared in a range of $2\theta=25^\circ$ to 50° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source, having a half width of more than 0.2° .

6. (Previously Presented) The process according to claim 2, wherein said powdery amorphous alloy material has a peak appeared in a range of $2\theta=25^\circ$ to 50° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source having a half width of more than 0.5° .

7. (Original) The process according to claim 2, wherein said powdery amorphous alloy material has a crystallite size calculated from X-ray diffraction analysis, which is less than 50 nm.

8. (Original) The process according to claim 2, wherein said powdery amorphous alloy material has a crystallite size calculated from X-ray diffraction analysis, which is less than 20 nm.

9. (Previously Presented) The process according to claim 1, wherein said metal (a') comprises at least one kind of a metal selected from the group consisting of Bi, In, Pb, Si, Ag, Sr, Ge, Zn, Sn, Cd, Sb, Ti, and Hg.

10. (Previously Presented) The process according to claim 1, wherein said metal (a') comprises at least one kind of a metal selected from the group consisting of Bi, In, Pb, Zn, Sn, Sb and Tl.

11. (Previously Presented) The process according to claim 1, wherein said metal (a') substantially comprises Sn.

12. (Previously Presented) The process according to claim 11, wherein said amorphous alloy material contains an amorphous $\text{Sn} \cdot \text{A} \cdot \text{X}$ alloy with a substantially non-stoichiometric ratio composition, with, A being at least one kind of a transition metal element, and X being at least one kind of an element selected from the group consisting of B, C, N, O, P, and S, where the element X is not always necessary to be contained, and said amorphous $\text{Sn} \cdot \text{A} \cdot \text{X}$ alloy has a relationship of $\text{Sn}/(\text{Sn} + \text{A} + \text{X}) = 20$ to 80 atomic in terms of the atom number of each element.

13. (Previously Presented) The process according to claim 1, wherein said transition metal (b') comprises at least one kind of a transition metal selected from the group consisting of Cr, Mn, Fe, Co, Ni, Cu, Mo, Tc, Ru, Rh, Pd, Ag, Os, Ir, Pt, Au, Ti, V, Y, Sc, Zr, Nb, Hf, Ta, and W.

14. (Previously Presented) The process according to claim 1, wherein said transition metal (b') comprises at least one kind of a transition metal selected from the group consisting of Cr, M, Fe, Co, Ni, Cu, Ru, Rh, Pd, Ag, Os, Ir, Pt, and Au.

15. (Previously Presented) The process according to claim 1, wherein said transition metal (b') comprises at least one of a transition metal selected from the group consisting of Cr, Mn, Fe, Co, Ni, and Cu.

16. (Original) The process according to claim 12, wherein said amorphous alloy material has a peak appeared in a range of $2\theta=25^\circ$ to 50° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source, having a half width of more than 0.2° .

17. (Original) The process according to claim 12, wherein said amorphous alloy material has a peak appeared in a range of $2\theta=25^\circ$ to 50° in X-ray diffraction using $K\alpha$ -rays of Cu as a radiation source, having a half width of more than 0.5° .

18. (Original) The process according to claim 12, wherein said amorphous alloy material has a crystallite size calculated from X-ray diffraction analysis, which is less than 50 nm.

19. (Original) The process according to claim 12, wherein said amorphous alloy material has a crystallite size calculated from X-ray diffraction analysis, which is less than 20 nm.

20. (Previously Presented) The process according to claim 1, wherein said amorphous alloy material has an average particle size in a range of from 0.1 to 2 μm .

21. (Previously Presented) The process according to claim 1, wherein said amorphous alloy material has an average particle size in a range of from 0.1 to 1 μm .

22. (Previously Presented) The process according to claim 20, wherein said amorphous alloy material has a particle size distribution in a range of from 0.01 to 20 μm .

23. (Previously Presented) The process according to claim 20, wherein said amorphous alloy material has a particle size distribution in a range of from 0.05 to 1 μm .

24. (Previously Presented) The process according to claim 20, wherein said amorphous alloy material has an average value of [longest length of particle]/[shortest length of particle], which is in a range of from 1.0 to 2.0.

25. (Previously Presented) The process according to claim 20, wherein said amorphous alloy material has an average value of [longest length of particle]/[shortest length of particle], which is in a range of from 1.0 to 1.5.

26. (Previously Presented) The process according to claim 1, wherein said amorphous alloy material has a specific surface area of more than 10 m²/g.

27. (Previously Presented) The process according to claim 1, wherein said amorphous alloy material has a specific surface area of more than 30 m²/g.

28. (Previously Presented) The process according to claim 1, wherein said metal compound (a) is soluble in said solvent (d).

29. (Previously Presented) The process according to claim 1, wherein said metal compound (a) comprises at least one kind of a metal salt selected from a group consisting of chlorides, sulfates and nitrates of said metal (a').

30. (Previously Presented) The process according to claim 1, wherein said metal compound (a) comprises at least one kind of a metal salt selected from a group consisting of chlorides, sulfates and nitrates of Sn.

31. (Previously Presented) The process according to claim 1, wherein said

transition metal compound (b) is soluble in said solvent (d).

32. (Previously Presented) The process according to claim 1, wherein said transition metal compound (b) comprises at least one kind of a metal salt selected from the group consisting of chlorides, sulfates and nitrates of said transition metal (b').

33. (Previously Presented) The process according to claim 1, wherein said complexing agent (c) comprises at least one kind of a compound selected from a group consisting of organic carboxylic acids and amines.

34. (Previously Presented) The process according to claim 33, wherein said complexing agent (c) comprises at least one kind of a compound selected from the group consisting of citric acids, ethylenediaminetetraacetic acid, and salts thereof.

35. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) comprises a material having an electrode potential which is inferior by more than 0.1 V to that of said metal (a') or said transition metal (b') which is the lowest.

36. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) comprises a material having an electrode potential which is inferior by more than 0.2 V to that of said metal (a') or said transition metal (b') which is the lowest.

37. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) comprises a material having a property that an aqueous solution of said material maintained at 25 °C exhibits a normal electrode potential of less than -0.2 V.

38. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) comprises a material having a property that an aqueous solution of said material maintained at 25°C exhibits a normal electrode potential of less than -0.5 V.

39. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) comprises at least one kind of a compound selected from the group consisting of lower oxygen compounds such as hypophosphorous acid, phosphorous acid, sulfurous acid, thiosulfuric acid, and dithionous acid; salts of these compounds; metal salts in the low valence state of Fe (II), Ti (III) and Cr (II); organic compounds such as formaldehyde, formic acid, and oxalic acid; and salts of these organic compounds.

40. (Previously Presented) The process according to claim 1, wherein said reducing agent (e) is soluble in said solvent (d).

41. (Previously Presented) The process according to claim 1, wherein said solvent (d) comprises at least one kind of a solvent selected from the group consisting of water and polar solvents.

42. (Previously Presented) The process according to claim 1, wherein said polar solvent includes alcohol, ester compounds, amide compounds, nitrile compounds, amine compounds, halogen compounds, sulfur compounds, liquid ammonia, and glacial acetic acid.

43. (Previously Presented) The process according to claim 1, wherein said solvent comprises at least one kind of a solvent selected from a group consisting of water and alcohols.

44. (Previously Presented) The process according to claim 1, wherein said mixed solution obtained in said step (1) contains a complex formed by said metal (a') and said complexing agent (c).

45. (Previously Presented) The process according to claim 1, wherein said mixed solution obtained in said step (1) contains a complex formed by said transition metal (b') and said complexing agent (c).

46. (Previously Presented) The process according to claim 1, wherein the step (2) of mixing the reducing agent (e) with the mixed solution obtained in the step (1) is performed under condition with a temperature of -10 to 100° C.

47. (Previously Presented) The process according to claim 1, wherein the

step (2) of mixing the reducing agent (e) with the mixed solution obtained in the step (1) is performed under condition with a temperature of 10 to 90° C.

48. (Previously Presented) The process according to claim 1, wherein the step (3) of oxidizing the reducing agent (e) contained in the mixture obtained in the step (2) is performed under condition with a temperature of -10 to 100° C.

49. (Previously Presented) The process according to claim 1, wherein the step (3) of oxidizing the reducing agent (e) contained in the mixture obtained in the step (2) is performed under condition with a temperature of 10 to 90° C.

50 to 53. (Cancelled).

54. (Previously Presented) The process according to claim 1, wherein the addition of said alkali in the step (3) is performed so that the pH value of the mixture is changed from less than 2 to a value in at range of from 5 to 10.

55. (Previously Presented) The process according to claim 1, wherein the alkali comprises at least one kind of a compound selected from the group consisting of hydroxides of alkali metals, hydroxides of alkaline earth metals, amines, and ammonia.

56. (Previously Presented) The process according to claim 1, wherein the step (2) is performed in an atmosphere comprising at least one kind of a gas selected from

the group consisting of hydrogen gas, nitrogen gas, and inert gas such as argon gas and helium gas.

57. (Previously Presented) The process according to claim 1, wherein the step (3) is performed in an atmosphere comprising at least one kind of a gas selected from the group consisting of hydrogen gas, nitrogen gas, and inert gas such as argon gas and helium gas.

58. (Previously Presented) The process according to claim 1, wherein the metal compound (a) and the transition metal compound (b) are used respectively in such an amount that $[\text{the number of moles of the metal (a') in the metal compound (a)}] / [\text{the number of moles of the transition metal (b') in the transition metal compound (b)}]$ falls in a range of from 0.1 to 10.

59. (Currently Amended) The process according to claim 1, wherein the metal compound (a) and the transition metal compound (b) are used respectively in such an amount that $[\text{the number of moles of the metal (a') in the metal compound (a)}] / [\text{the number of moles of the transition metal (b') in the transition metal compound (b)}]$ falls in a range of from 0.2 to 5.

60. (Previously Presented) The process according to claim 1, wherein the complexing agent (c) is used in such an amount that $[\text{the number of moles of the complexing agent (c)}] / [\text{the number of moles of the metal compound (a) + the number of}$

moles of the transition metal compound (b)] falls in a range of from 1 to 5.

61. (Previously Presented) The process according to claim 1, wherein the completing agent (c) is used in such an amount that [the number of moles of the complexing agent (c)]/[the number of moles of the metal compound (a)+the number of moles of the transition metal compound (b)] falls in a range of from 2 to 5.

62. (Previously Presented) The process according to claim 1, wherein the reducing agent (e) is used in an amount which is 1 to 3 times versus the sum of the equivalence point of the metal compound (a) and that of the transition metal compound (b).

63. (Previously Presented) The process according to claim 1, wherein the reducing agent (e) is used in an amount which is 1 to 2 times versus the sum of the equivalence point of the metal compound (a) and that of the transition metal compound (b).

64. (Previously Presented) The process according to claim 1, which further includes a step of washing said amorphous alloy material.

65. (Previously Presented) The process according to claim 1, which further includes a step of drying said amorphous alloy material.

66. (Previously Presented) The process according to claim 1, which rather includes a step of grinding said amorphous alloy material.

67 To 71. (Cancelled).

72. (Previously Presented) A process for producing an electrode structural body, including a step of arranging an electrode material produced by the process defined in claim 1, on a collector constituted by a material incapable of being alloyed with lithium in electrochemical reaction.

73. (Original) The process according to claim 72, wherein said electrode material is arranged on said collector by way of press-forming.

74. (Original) The process according to claim 72 which comprises a step of preparing a paste by mixing said electrode material with a binder and, if necessary, a solvent and a step of arranging said paste on said collector.

75. (Cancelled).

76. (Cancelled).

77. (Currently Amended) A process for producing a rechargeable lithium battery comprising at least an anode, a cathode and an electrolyte and in which oxidation-reduction reaction of lithium is used, characterized by including a step (i) of forming said anode by arranging an electrode material produced by the process defined in

any of claim 1 on a collector comprising a material incapable of being alloyed with lithium in electrochemical reaction to form an electrode structural body as said anode and a step (ii) of arranging said anode and said cathode to oppose to each other through said electrolyte.

78. (Previously Presented) The process according to claim 77, wherein the step (i) includes a step of arranging said electrode material on said collector by way of press-forming.

79. (Previously Presented) The process according to claim 77, wherein the step (i) includes a step of preparing a paste by mixing said electrode material with a binder and, if necessary, a solvent and a step of arranging said paste on said collector.

80. (Previously Presented) The process according to claim 77 which further includes a step of forming said cathode using a lithium-containing electrode material.